

Dynamic spin susceptibility and superconductivity in cuprates

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A relaxation-function theory for the dynamic spin susceptibility in the t - J model is presented. Spin correlation functions, staggered magnetization, uniform static susceptibility, and antiferromagnetic correlation length are calculated in a wide region of hole doping and temperatures. The self-energy is calculated in the mode-coupling approximation and the dynamical spin susceptibility is studied for various temperatures and hole doping. The obtained results are in a reasonable agreement with numerical simulations and experimental data. A relation of the obtained results to the spin-fluctuation theory of superconductivity in cuprates studied within the Hubbard model is briefly discussed.